Goddard Procedural Requirements (GPR)

DIRECTIVE NO.	GPR 8700.3B	**APPROVED BY Signature:**	*Original Signed by*
EFFECTIVE DATE:	February 15, 2005	**NAME:**	Edward J. Weiler
EXPIRATION DATE:	February 15, 2010	**TITLE:**	Director

COMPLIANCE IS MANDATORY

Responsible Office: 500/Applied Engineering and Technology Directorate

Title: Design Validation

Preface

P.1 PURPOSE

This procedure defines the process for the validation of GSFC products.

P.2 APPLICABILITY

This procedure applies to the development of all Goddard Space Flight Center (GSFC) products and processes covered by the scope of the GSFC Quality Management System.

P.3 AUTHORITY

NPD 1280.1, NASA Management System Policy

P.4 REFERENCES

a. GPR 1310.1, Customer Commitments and Review

b. GPR 5330.1, Product Processing, Inspection, and Test

c. GPR 5340.2, Control of Nonconformances

d. GPR 8700.1, Design Planning and Interface Management

e. GPR 8700.2, Design Development

P.5 CANCELLATION

GPG 8700.3A, Design Validation

P.6 SAFETY

Validation plans shall address personnel and product safety issues with a special emphasis on the identification and mitigation of all safety issues associated with product inspections, functional and operational tests, and environmental simulations.

P.7 TRAINING

None.

P.8 RECORDS

Record Title	Record Custodian	Retention
Work Order Authorization (WOA) or equivalent for software	Product Design Lead (PDL)	*NRRS 8/5A2 – Project Test, Engineering, and Evaluation files. Records may be retired to a Federal Records Center (FRC) when 2 years old. Destroy when 15 years old.

**NRRS – NASA Records Retention Schedules (NPR 1441.1)*

P.9 METRICS

Internal and external third party audit findings related to effective design validation will be used to assess the effectiveness of this procedure. In addition, periodic review of problem reports generated during design validation activities will include an assessment of the efficacy of the design validation process.

P.10 DEFINITIONS

a. Validation - Proof that the Operations Concept, Requirements, and Architecture and Design will meet Mission Objectives, that they are mutually consistent, and that the "right system" has been designed. May be determined by a combination of test or analysis. Generally accomplished through trade studies and performance analysis by Phase B and through tests in Phase D.

b. Product Design Lead (PDL) - The manager or leader with overall responsibility for managing the design activity, managing the technical and organizational interfaces identified during design planning, and where required, forming and leading the Product Design Team (PDT). The term refers to flight project managers, mission managers, instrument managers, subsystem technical managers, integrated product development team leaders, lead engineers, etc.

PROCEDURES

In this document, a requirement is identified by "shall," a good practice by "should," permission by "may" or "can," expectation by "will," and descriptive material by "is."

1.0 Validation Plan Review/Update

Prior to product validation, the PDL shall ensure that the Product Validation Plan is complete and accurate, updating it as necessary (see GPR 8700.1 and GPR 8700.2).

2.0 Product Validation

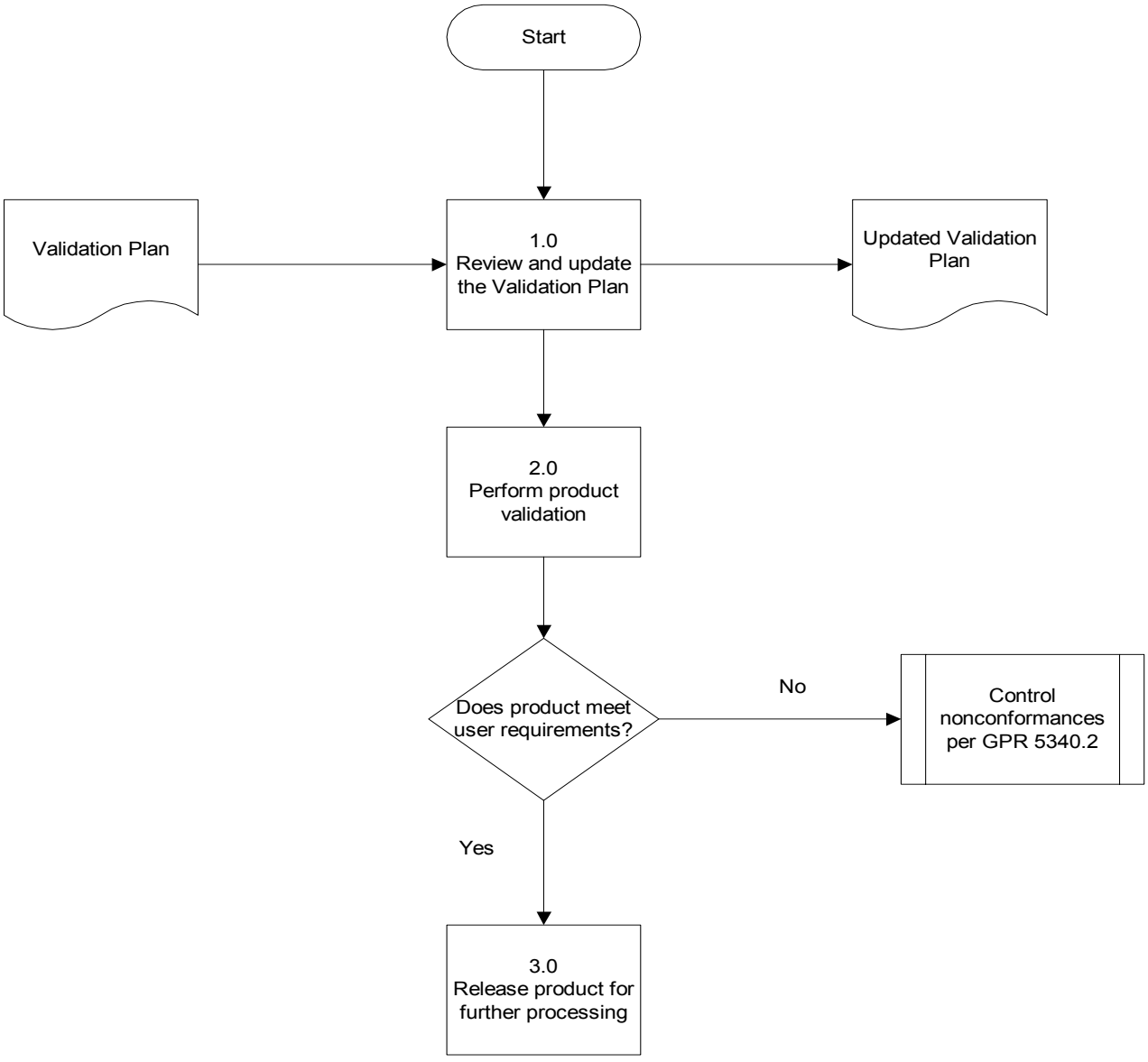
2.1 The PDL/PDT shall perform product validation under customer defined operational, storage, or other conditions, as required. Note that for product validation to be complete, intermediate validation activities may be required on discrete portions (e.g. subassemblies, assemblies, components) of the product, in addition to the final validation on the complete, integrated product.

2.2. Starting at the appropriate point in project maturity (as defined in GPR 5330.1) validation activities shall be planned and documented using the WOA form per GPR 5330.1. Nonconformances found during validation shall be documented and processed in accordance with GPR 5340.2.

3.0 Product Release

The PDL shall document the successful completion of validation and release the product for further processing in accordance with the design plan (see GPR 8700.1) and customer requirements (see GPR 1310.1).

Design Validation Flowchart



CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	8/12/98	Initial Release
A	5/7/99	Header and footer format change. Title change of GPG 1310.1 reference. Title change of GPG 5330.1 reference. Deleted reference to GPG 8730.4 (cancelled). Clarified validation requirements and included documentation requirements in step 2.2. Indicated responsibility for maintenance of quality records. Moved quality records to P6. Revised flow chart.
A	8/20/04	Expiration date extended until December 31, 2004 per the enclosed memo.
B	02/15/05	Updated to current GPR format. Added Metrics, Training, and Safety sections. Changed validation definition to be compatible with GPR 7120.5. Update P3 and P4. Clarified all requirements to clearly distinguish them from supporting text in accordance with the NASA rules review.